



May 13, 2022

Pat Galvin
Chief Commercial Officer
Great Bear Pantheon LLC
3705 Arctic Blvd Ste 2324
Anchorage, AK 99503

**RE: LONS 22-002, Great Bear Pantheon, LLC, Alkaid Unit, Alkaid 2 and Alkaid 3,
Exploration Program Unit Plan of Operations Decision Exploration Phase**

Dear Mr. Galvin:

I. INTRODUCTION

On February 8, 2022 Great Bear Pantheon, LLC (Great Bear) submitted a request to the Division of Oil and Gas (Division) for approval of a Unit Plan of Operations (Plan) to carry out Alkaid 2 and Alkaid 3 Exploration Program (Project) in the Alkaid Unit (AKU). Approval of this Plan, along with approvals from other state and federal agencies (Agencies), is necessary for Great Bear to carry out the Project. Any further development is subject to additional review and approval by the Department of Natural Resources (DNR).

II. SCOPE OF DECISION

The DNR Commissioner has delegated authority for approval of Unit Plan of Operations to the Division under Department Order: 003 in accordance with Alaska Statute (AS) 38.05 and 11 Alaska Administrative Code (AAC) 83.346. As set forth below, the Division has evaluated the proposed Plan to determine if sufficient information, as required by 11 AAC 83.346, is provided. The Division has also considered that criteria set forth in 11 AAC 83.303. In approving a Plan, the Division may require amendments that it determines are necessary to protect the State's interests (11 AAC 83.346(e)).

Great Bear is seeking approval to conduct the Project, located within the AKU approximately 20 miles south of Deadhorse. The Alkaid 2 and 3 gravel pads, positioned four miles apart, will each sit 1,000 feet west of the Dalton Highway. Each pad will have two access roads connecting directly to the highway. The ingress portion of the access roads will be 2,500 feet by 40 feet for Alkaid 2 and 1,200 feet by 40 feet for Alkaid 3. Both egress roads will be 1,000 feet by 40 feet. The pads are expected to have a 500-foot by 260-foot working surface area and will each cover a total of 3.3 acres of tundra. Great Bear will construct one staging pad using rig mats on the former Alcor 1 site, which sits directly across the Dalton Highway from the Alkaid 2 ingress road. The Alcor 1 staging pad will be primarily used for tubular storage and conex with dry supplies.

Construction for Alkaid 2 is expected to begin mid to late May with drilling activities beginning in July. Construction for Alkaid 3 will begin after drilling at Alkaid 2 is completed, and not before July 31. Great Bear will source water from Annie Pit, the Sagvanirktok (Sag) river and a pair of lakes 1.5 miles south of Alkaid 2. Gravel will be sourced from an existing material site at Dalton MP 390.

The following Plan elements require authorization from other agencies:

Agency	Permit Type
Alaska Oil and Gas Conservation Commission (AOGCC)	<ul style="list-style-type: none"> Permit to drill
Alaska Department of Fish and Game (ADF&G)	<ul style="list-style-type: none"> Title 16 Fish Habitat Public Safety Permit
Alaska Department of Environmental Conservation (ADEC)	<ul style="list-style-type: none"> Minor General Permit MG1 Oil Discharge Prevention & Contingency Plan (C-Plan) Amendment Temporary Storage of Drilling Waste Plan Temporary Storage of Non-Drilling Waste Plan
DNR Division of Mining, Land and Water (DMLW)	<ul style="list-style-type: none"> Temporary Water Use Authorization
Alaska Department of Transportation (DOT)	<ul style="list-style-type: none"> Driveway Permit
North Slope Borough (NSB)	<ul style="list-style-type: none"> Development Plan
US Army Corp of Engineers (USACE)	<ul style="list-style-type: none"> Discharge Permit

III. LAND STATUS

The AKU comprises state lands.

A. Division's Leased Lands: This section refers to Division managed oil and gas leases regardless of ownership of overlying surface lands.

Oil and Gas Leases: 391704 and 391706

Oil and Gas Mineral Estate Lessee: Great Bear Petroleum Ventures, LLC

Surface Ownership and Access Agreement: State of Alaska

Special Use Lands: ADL 50666

Jointly Managed Lands: N/A

Other Considerations: N/A

Project Components	Meridian, Township, Range, & Section(s)	GPS Coordinates
Alkaid 2 Well Site and Driveways	U007N014E05	69.9861 N, -148.7054 W
Alkaid 3 Well Site and Driveways	U007N013E25	69.9254 N, -148.7816 W

Alcor Staging Pad	U007N014E05	69.9889 N, -148.6844 W
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IV. PROPOSED OPERATIONS

The Plan describes the proposed operations in full detail. Set forth below is a summary of the key details.

A. Sequence and Schedule of Events

Project Milestone	Project Milestone	Proposed Start Date	Proposed End Date
1	Begin gravel mining and conditioning	5/1/2022	6/1/2022
2	Construct Alkaid 2 gravel driveway (ingress and egress) and drill pad	5/15/2022	7/1/2022
3	Construct Alcor Staging Pad using rig mats and begin staging equipment	6/1/2022	7/1/2022
4	Move drill rig to Alkaid 2, rig up and spud	7/1/2022	7/15/2022
5	Drill, case and frac Alkaid 2	7/15/2022	10/15/2022
6	Construct Alkaid 3 gravel driveways and drill pad	7/15/2022	8/31/2022
7	Alkaid 2 flow tested	10/15/2022	5/31/2023
8	Move rig to Alkaid 3, rig up and spud	2/1/2023	2/15/2023
9	Alkaid 3 well drilled and cased	2/15/2023	3/30/2023
10	Alkaid 3 fracked and flow tested	5/15/2023	2/1/2024

B. Well Sites

The Alkaid 2 well site will be located approximately 20 miles south of Deadhorse, 1000 feet west of the Dalton Highway. The Alkaid 3 well site will be located approximately four miles south of Alkaid 2, and 1000 feet west of the Dalton Highway. Both well sites will be accessed by two driveways connected to the highway. Each site will have a 500-foot by 260-foot working surface, covering approximately 3.251 acres of tundra at the base.

Cruz Construction has developed techniques designed to address the challenges presented when placing gravel intended for same-season heavy use. A layer of permeable geotextile fabric will be installed directly over the organic layer to provide separation and stabilization of the tundra. A layer of two to three feet of gravel will be placed with a dozer and compacted with a vibratory roller to further evacuate water from the fill. A three-to-six-inch thaw depth in the active layer is expected when the first lift is placed. This initial layer will be suitable only for off-road equipment. A CAT 730 haul truck will be used to transfer stockpiled gravel from the roadside to

the dozer for placement. The haul trucks will split tracks to avoid damage to the geotextile and vegetation mat caused by rutting. Successive layers of fill will be placed in lifts of approximately 12 inches and compacted up to a total thickness of five feet. The final lift will be placed loose and bladed into windrows to help remove moisture, after which it will be leveled and compacted to a minimum of 95% of the maximum dry density.

The Alkaid 2 and 3 drill sites will include a vertical well, drilled to the base of the Alkaid Brookian sand at 8,000 feet, and will have a total depth of up to 18,000 feet. The horizontal well and Alkaid 2 will be drilled to the southwest, and the well at Alkaid 3 will be drilled to the northeast. Each horizontal well will be logged, cased, and fracture stimulated with a multi-stage frac.

C. Buildings

The Alkaid 2 and 3 well sites are expected to house nearly identical facilities and building layout. Great Bear plans to install a satellite office camp with an 11-bed capacity; fuel, drilling fluids, and waste storage areas; and standard maintenance buildings. The crew is expected to be housed primarily at a camp in Deadhorse or the Aurora Hotel.

D. Fuel and Hazardous Substances

Fuel will be trucked to and stored on the drilling pads. Fuel storage tanks will be used at both the Alkaid 2 and 3 drill sites and will include secondary containment that will hold a minimum of 110% of the single largest tank or group of tanks permanently manifolded together. Fuel storage, handling, transfers, and spill reporting will be conducted in accordance with the regulatory requirements as described in the Great Bear Exploration Project C-Plan 21-CP-5191, North Slope Environmental Field Handbook, and Alaska Safety Handbook. All bulk fuel and fluid transfers of more than 500 gallons will be monitored by an Alaska Clean Seas (ACS) spill technician. The size of the day tank on the rig may vary but will be less than a 10,000-gallon capacity. The maximum amount of fuel stored at a drill site will be 9,000 gallons. All fuel and hazardous materials stored at the drill site will be kept more than 100 feet from a waterbody. Drip pans will be placed under vehicles and equipment capable of leaking hazardous fluids. No vehicle refueling will take place in an active river floodplain. All independent fuel and hazardous substance containers will be marked with the contents and the lessee's or contractor's name using paint or permanent label.

E. Solid Waste Sites

All waste disposal procedures will conform to local, state, and federal requirements. The general approach to waste management will be to temporarily store wastes and periodically haul waste materials to existing North Slope facilities for proper treatment and disposal. Solid, non-burnable waste will be deposited in dumpsters located at each site. These containers will be hauled to the NSB landfill at Prudhoe Bay Unit (PBU). Food waste that could attract wildlife will be stored in enclosed containers pending periodic hauling, or such wastes will be hauled daily to an approved disposal center. To reduce the amount of trash that must be hauled from the drilling location, all solid, burnable waste may be incinerated at the location in accordance with 18 AAC 50. The ash will be hauled to the NSB landfill. Camp wastewater will be hauled to an approved disposal facility on the North Slope. The satellite office camp should generate less than 500 gallons per day of domestic wastewater. Drill cuttings will be promptly trucked to an approved grind and inject (G&I) facility when generated. Waste drilling fluids and produced reservoir fluids will be

processed on-site for reuse where possible or trucked to an approved facility in Prudhoe Bay for injection. Used oil will be recycled or packaged in drums and hauled to Prudhoe Bay for shipment to an approved recycle facility. A metal temporary drill cuttings storage container will be located on the pad to facilitate backhaul operations and continuity of off-site annular injection, if permitted by AOGCC. Wastewater will be stored in tanks until taken to the Prudhoe Bay Unit (PBU) G&I facility for disposal. The wastewater will be hauled off to the G&I as frequently as possible so as not to create build-up at the site location. The PBU G&I is a Class II facility. The majority of wastewater will be sent there for disposal. A small amount of wastewater will be Class I and will be sent to a facility at Prudhoe Bay Pad 3. Cuttings will be hauled immediately to the G&I for disposal when generated. After the removal of drilling waste from the storage area, a visual site inspection will be performed to verify that all drilling waste has been removed. A final site inspection report, including drilling waste volume and final disposition of waste, will be submitted to ADEC within seven days of the site inspection as required under 18 AAC 60.430. All drilling waste will be disposed of prior to completion of site operations.

F. Water Supplies

Potable water will be obtained from service providers in Deadhorse. The remaining water will be obtained from permitted waterbodies near the drill site. Great Bear has current Temporary Water Use Authorizations (TWUA) for the intended water sources, and will acquire TWUAs for additional sources, as necessary. Title 16 Fish Habitat Permits are in hand for any fish-bearing water sources. In 2012 Great Bear acquired a TWUA allowing for the use of up to 11 million gallons of water from the Sag River to be transferred into the Annie Pit for use on Great Bear wells in the area. In addition, Great Bear's Merak 1 plan of operations provided for a flexible pipe/hose to be placed along the Dalton Highway from Annie Pit down to the Merak 1 drill site. Following this model, Great Bear is in consultation with DNR Water, as well as ADF&G Habitat, regarding a plan to again use Sag River water to fill the Annie Pit water source and then placing a flexible pipe or hose from Annie Pit to Alkaid 2 along the ingress driveway to provide the water needed for drilling and completion operations. Great Bear also has a TWUA for a pair of lakes approximately 1.5 miles south of Alkaid 2 next to the Dalton Highway, and plans to run a flexible hose along the base of the highway shoulder to the lakes to facilitate water withdrawal and transport. The hose will be monitored to ensure that there are no releases of water to the tundra during water withdrawals. The water crossings of the Dalton Highway and the TAPS right-of-way service road will utilize either a "Low Pro Crossing" steel device, a pipe beneath the roadway, or an overhead pipe that allows for unimpeded vehicle traffic at the water crossing location.

G. Utilities

All operations will be self-contained and powered by generators. Twenty-four-hour phone service and internet will be available at each site. Operational radio communications will be provided using fixed base stations and truck-mounted, mobile "bread-board" radios. Operational frequencies will be coordinated between the various Great Bear field supervisors, support contractors, and well service providers. Small communications towers will be placed at the site. All communication towers are temporary and will be removed at demobilization.

H. Material Sites

The gravel for the pad and driveway will be obtained from an existing material site. At this time, it is expected that the material will be taken from MS 65-9-099-2. Initially, the gravel will be removed and stored at the material site until site clearance is obtained for Alkaid 2 pad and driveway. MS 65-9-099-2 is a DNR managed material site. Its access point is located on the west side of the Dalton Highway at milepost 389.7 (within eight miles from the Alkaid 2 site, and four miles from Alkaid 3). Cruz Construction has extensive knowledge of this material site. In 2015, Cruz developed a 60-acre area for the extraction of 750,000 tons of borrow and crushed aggregate on the south side of the access road that divides the material site. Cruz will re-permit and selectively mine the same area to produce the materials required for this project. The anticipated disturbed area in the material site is approximately four acres. Development will not require any significant clearing of trees; however, the material site will require approximately six feet of overburden removal. Cruz plans on excavating to a depth of approximately 12 feet to obtain six feet of usable borrow materials. Within the material site, gravel will be mined in a thawed state with a D10 Dozer. The dozer will make at least one pass over the full mined face during each shift, removing the top four to eight inches of thawed gravel and exposing the frozen gravel below. Thawed gravel is pushed into a single stockpile and further “stacked” with a 365 excavator to create optimal conditions for drainage. With the free draining alluvial encountered on the North Slope’s lower Sagavanirktok River sources, a drainage period of three to seven days is typically sufficient to reduce the moisture condition to a level acceptable for placement and compaction. Great Bear will obtain the necessary authorizations from DMLW for material sites.

I. Roads

The ingress portion of each driveway, approximately 2,500 feet in length for Alkaid 2 and 1,200 feet in length at Alkaid 3, will connect the drill pad to the Dalton Highway. The ingress portion of the driveway at Alkaid 2 will connect to the Dalton Highway directly across from the access road to the Alcor Staging Pad. The egress portion of each driveway, approximately 1,000 feet in length, will lead from the drill pad directly to the Dalton Highway. The driveways will be for one-way travel only. Each driveway will be five feet thick and tapered on the sides, such that the full footprint will be 40 feet wide. The procedure for gravel placement for the driveways will follow the same methodology described above in the well site section.

J. Airstrips

No airstrips, or airstrip related permits are necessary for this project.

K. All Other Facilities and Equipment

In the event of a serious emergency, resources would be mobilized from Deadhorse. Medical evacuation, if necessary, would be provided to the clinic in Deadhorse for patient stabilization and/or transfer to Fairbanks or Anchorage hospital facilities.

L. Rehabilitation Plan

Upon completion of drilling and evaluation operations, each well could either be plugged and abandoned (P&A), suspended in accordance with AOGCC regulations, or retained as a producing well. If the wells are P&A or suspended, all equipment will be removed, and the site closed. As part of site closure activities, any remaining debris will be hauled to an approved disposal site. Any spills discovered as part of site closure activities will be chipped or scraped to remove the contaminated material. This material will be transported to an appropriate facility for

disposal. Within two years after well testing is complete the Division will coordinate with Great Bear to assess plans for future use of the well sites. If a well is P&A, Great Bear will work closely with DNR to determine what level of gravel removal is in the State's best interest. If DNR determines that an entire gravel pad and driveway should be removed, then Great Bear will remove the pad and driveway in accordance with DNR specifications and to the satisfaction of the DNR Commissioner.

As part of the Plan of Operations application Great Bear engaged an environmental contractor to assist Great Bear in creating a draft removal and rehabilitation plan for the Alkaid 2 and Alkaid 3 pads and driveways. The draft removal and rehabilitation plan was provided to the Division for review. If DNR determines that a pad and driveway are to be removed, Great Bear will, in coordination with appropriate agencies, develop a final removal and rehabilitation plan. The plan will address the area, type, and extent of damage and will be developed in accordance with the Alaska Coastal Revegetation & Erosion Control Guide developed by the State of Alaska Plant Materials Center, the Streambank Revegetation and Protection Guide developed by the Alaska Department of Fish and Game, and other relevant guidance documents.

M. Operating Procedures Designed to Minimize Adverse Effects

Fish and Wildlife Habitats

Great Bear has located both the Alkaid 2 pad and the Alkaid 3 pad as close to the Dalton Highway as permissible to keep it within the previously disturbed transportation corridor and minimize impacts beyond that corridor. Each pad is located on the west side of the highway to use the highway as a buffer to the Sag River. The Alcor Staging Area will be constructed with rig mats and used to minimize the size of each drilling pad and minimize the amount of wetlands impacted by the Project. Based on recommendations from the US Fish and Wildlife Service (USFWS), to mitigate any potential impact to migratory bird nesting, Great Bear will ensure that a layer of permeable geotextile fabric is placed over the Alkaid 2 pad area and each driveway path prior to June 1. As noted by USFWS, this activity should be sufficient to discourage the nesting of any migratory birds in the project area. In addition, Great Bear will not place any gravel at the Alkaid 3 location until after July 31.

Historic and Archeological Sites

The area impacted by this project, as well as the general Great Bear project area, has been pre-cleared for historic and archeological sites during previous permitting for wells and seismic acquisition projects in 2012-2016.

Public Use Areas

Access to each driveway and drill pad will be restricted to the general public; however, existing access along the Dalton Highway will not be impacted by the Project.

Other Uses

Great Bear will obtain a Letter of Non-Objection from Alyeska Pipeline Service Company to cross their fuel gas line for driveway construction, and to cross the TAPS Right of Way for use of the Alcor Staging Area and the Annie Pit water source.

In approving a Plan, DNR may require amendments necessary to protect the State's interest (11 AAC 83.346). The Division has determined that to protect the State's interest, it is necessary to

incorporate the 2018 North Slope Mitigation Measures. Great Bear addressed these mitigation measures in the application process, but it is necessary to amend the Plan to make clear that the Plan incorporates the 2018 North Slope Mitigation Measures.

All plan applicants must complete a mitigation measure analysis form demonstrating that each mitigation measure is satisfied or inapplicable to the proposed Plan, or that the applicant is seeking an exception. The 2018 North Slope Mitigation Measures allow for the Division to grant an exception if the applicant shows that compliance with the measure is not practicable or that the applicant will undertake an equal or better alternative to satisfy the intent of the mitigation measure. Great Bear completed the mitigation measure analysis for the North Slope Areawide and seeks exceptions to the mitigation measures discussed below.

North Slope Mitigation Measure A.1.h.

Exploration roads, pads, and airstrips shall be temporary and constructed of ice. Use of travel roads, pads, and airstrips may be permitted on a case-by-case basis by the Director, in consultation with Division of Mining, Land, and Water (DMLW) and ADF&G.

Great Bear provided the below request and explanation for the exception:

The Alkaid 2 and Alkaid 3 wells will be completed as long-term pilot production tests of a known oil reservoir. The long-term pilot production test is necessary to determine the initial flow rate and decline curve of production within this reservoir to demonstrate the production profile and economic potential prior to investment in a full production spread of equipment.

Further, in order to fully test the reservoir's potential, a horizontal multi-stage hydraulic fracture stimulation operation ("frac") is needed. The frac requires significant volumes of water be readily available at the drill site. Storage of sufficient water on site is both impractical due to size requirements and would be cost prohibitive. Having access to Annie Pit and the Sag River as a ready water source with a large-capacity hose to deliver the water to the Alkaid 2 and Alkaid 3 site is necessary. Sufficient water from Annie Pit and the Sag River are only available during the spring/summer months.

For all these reasons, a solely winter operation and ice pad/ice road supported project will not meet the objectives of the project.

Great Bear has made efforts to mitigate the impact of granting an exception to this mitigation measure, and to lessen the possibility that the gravel pad and driveways will need to be removed and rehabilitated if the project is not successful. Each location is sited within the Dalton Highway transportation corridor. In addition, the Alkaid 2 pad is located near a designated potential pipe storage pad within the Alaska Natural Gas Pipeline project description. If an Alkaid development project does not move forward, the State may choose to keep the pads as support for maintenance of the Dalton Highway or as a potential pipe storage pad for the gasline project.

The intent of this measure is to minimize the impacts to tundra and wildlife from oil and gas exploration activities by requiring temporary and seasonal ice infrastructure. The Division finds that Great Bear has shown rationale that compliance with the measure is not practicable. Great Bear's proposed exploration activities would face additional challenges if conducted from temporary ice infrastructure, which may result in extending the length of time to complete the

Project to an unreasonable extent. The Division grants an exception to this mitigation measure to allow for the Applicant's alternative as set forth in the Plan. This exception does not apply to activities that the Applicant may propose in future or amended plans of operations.

North Slope Mitigation Measure A.5.a.

Exploration activities must be supported only by ice roads, winter trails, existing road systems, or air service. Wintertime off-road travel across tundra and wetlands may be approved in areas where snow and frost depths are sufficient to protect the ground surface.

Great Bear provided the below request and explanation for the exception:

An exception to this Mitigation Measure is requested for the gravel driveways. See Response to MM 1(h), above.

In addition, at each site both an ingress and egress driveway are proposed for multiple reasons. First, having one-way travel on each driveway minimizes the width of the driveway and improves safety which minimizes the risk of spills. Second, not requiring a turn-around area on the pad minimizes the size of the pad and the gravel that must be placed.

The intent of this measure is to minimize the impact to tundra and wildlife caused from roads used for oil and gas exploration activities by requiring temporary and seasonal ice roads or use of existing road systems where practicable. The Division finds that Great Bear has shown rationale that compliance with the measure is not practicable. Great Bear's proposal includes summer exploration activities that require access using gravel roads. Constructing ice roads for summer use would not be practicable. The Division grants an exception to this mitigation measure to allow for the Applicant's alternative as set forth in the Plan. This exception does not apply to activities that the Applicant may propose in future or amended plans of operations.

North Slope Mitigation Measure A.5.d.

Gravel use may be authorized on a site-specific basis if it is determined, after consulting with ADF&G and DMLW, that no practicable alternatives exist for constructing an exploration road or pad in the area south of the boundary described below and depicted in the map below:

Beginning at the NPR-A boundary, from the northeast corner of T 1N, R 2E, then east to the northwest corner of T 1N, R 9E, then north to the northwest corner of T 4N, R 9E, then east to the northwest corner of T 4N, R 23E, then south to the southwest corner of T 4N, R 23E, and then east along the top of T 3N to the ANWR boundary.

Great Bear provided the below request and explanation for the exception:

See response to MM 1(h) for justification for an exception.

The intent of this measure is to minimize the impact to tundra and wildlife caused from oil and gas exploration activities by limiting the use of gravel in such activities. This mitigation measure provides a boundary line, below which steps are provided for operators to obtain approval for

exploration activities to be conducted from gravel pads and roads. The Division finds that Great Bear has shown rationale that compliance with the measure is not practicable. Great Bear's proposed pad and road infrastructure will exist north of the gravel consideration boundary line. ADF&G and DMLW have been consulted before making the determination that no practicable alternatives exist for summer exploration in this area. The Division grants an exception to this mitigation measure to allow for the Applicant's alternative as set forth in the Plan. This exception does not apply to activities that the Applicant may propose in future or amended plans of operations.

The Division has determined that to protect the State's interest, it is necessary to incorporate the 2018 North Slope Mitigation Measures as amendments and stipulations to this Plan (11 AAC 83.346).

N. Phased Evaluation

The Plan addresses exploration activities for Alkaid 2 and Alkaid 3, but based on the results of this exploration, the Division anticipates that Great Bear may submit Plans for additional exploration wells. Thus, in considering the exploration phase, the Division considered both the specific activities proposed under this Plan as well as typical exploration activities that Great Bear might propose for further exploring the AKU.

The Division considered the potential impacts of exploration on public and State interests. In the oil and gas context, the public interest includes maximizing economic and physical recovery of oil and gas resources (AS 38.05.180(a)(1)). The State has an interest in protecting the public interest, and in encouraging assessment of oil and gas resources while minimizing the adverse impacts of exploration, development, production, and transportation activities (AS38.05.180(a)(2)).

In considering potential impacts, the Division also considered the operating procedures Great Bear has designed to minimize adverse effects of the proposed activities. These operating procedures include complying with the mitigation measures attached to the leases. These measures come from the North Slope Areawide Best Interest Finding (BIF) to address potentially negative effects of oil and gas exploration on fish and wildlife species, habitats and their uses, subsistence uses, and local communities. Great Bear has provided a mitigation measure analysis, which is required as part of their Plan submittal.

i. Facilities Impacts on the Project Area.

Great Bear has designed, sited, and proposed to operate exploration drilling facilities in accordance with the North Slope Mitigation Measures. While Great Bear proposes to build new gravel pads and utilize the gravel pads to conduct exploration activities in the summer, Great Bear has shown adequate mitigation measure analysis and provided appropriate mitigation measures, and certain financial assurances to minimize impacts to the environment.

Fuel and Hazardous Substances Potential Impacts on the Project Area

The exploratory drilling proposed under the Plan, as well as other exploratory drilling Great Bear might propose during the exploration phase, will result in drilling muds, cuttings, and produced water and pose some risk of a spill. Discharges of drilling muds, cuttings, and produced waters; oil spills; and accidental spills of fuel, lubricants, or chemicals can all have impacts to water,

wildlife, and habitats during this exploration program. Impacts from exploration activities, from either disposal activities or a spill, could adversely affect water quality, but impacts are expected to be local and temporary because of dilution, settling, and other natural altering and regenerative processes.

Drilling Muds and Produced Water

Byproducts of drilling activities include muds and cuttings, produced water, and associated wastes. Produced water contains naturally occurring substances such as clay, sand, oil, water, and gas. Most drilling wastes are disposed of under ADEC's solid waste disposal program and re-injection is the preferred method for disposal of drilling fluid. Most oil field wastes are considered non-hazardous and waste fluids are recycled, filtered, and treated before re-injection or disposal. Cuttings and waste fluids must be made non-hazardous before injection. Produced water is treated using heat, gravity settling, and gas flotation devices to remove hydrocarbons. After treatment, produced water is re-injected into either the oil-bearing formation to maintain pressure and enhance recovery, or into an approved disposal well. Cuttings disposal is done through grinding and injecting on-site, or cuttings are transported to an approved disposal site. Wastewater, including sanitary and domestic graywater, is also treated to meet effluent guidelines before discharge.

During exploration drilling, muds and cuttings are stored on-site, in holding tanks, or in a temporary storage area and then hauled to an approved solid waste disposal site or re-injected into the subsurface at an approved injection well. All production muds and cuttings on the North Slope are re-injected into a Class II injection well. All produced waters are re-injected either into the producing formation or into an injection well. AOGCC oversees proper and safe handling and disposal of drilling wastes and oversees the underground operation of the Alaska oil industry on private and public lands and waters. AOGCC also administers the Underground Injection Control Program (UIC) for oil and gas wells, acts to prevent waste of oil and gas resources and ensure maximum recovery, and protects subsurface property rights. All disposal wells inject fluids deep beneath any drinking water aquifers. North Slope Mitigation Measure A.4.j states that the preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection.

Great Bear's Plan states that drill cuttings will be promptly trucked to the PBU G&I facility. Waste drilling fluids and produced reservoir fluids will be processed on-site for re-use where possible or trucked to the PBU G&I facility. Temporary metal storage containers may be located on the pads, if permitted by AOGCC. Wastewater will be stored on-site in storage tanks until it is brought to the PBU G&I facility. Some Class I wastewater will be sent to a facility located on Prudhoe Bay Pad 3. After the removal of drilling waste from the storage areas, a visual site inspection will be performed, after which a final site report including drilling waste volume and final disposition of waste will be submitted to ADEC in accordance with 18 AAC 60.430.

Accidental Spills

Impacts resulting from accidental spills would depend on the type of product, the location, volume, season, and duration of the spill or leak, and the effectiveness of the cleanup response. Heavy equipment, such as trucks, tracked vehicles, and tank trucks, commonly

use diesel fuel, gasoline, motor oil, hydraulic fluid, antifreeze, and other lubricants. Spills or leaks could result from accidents, improper refueling procedures, or from corrosion of lines. Under standard DNR permit conditions for off-road activity, secondary containment must be provided at fuel hazardous substance storage and transfer areas. A secondary containment or surface liner must be placed under all container or vehicle fuel tank inlet and outlet points, and appropriate spill response equipment must be on hand during any transfer of handling of fuel or hazardous substances.

Oil Spills

Mitigation measures include development of oil spill contingency plans and providing adequate spill response training. North Slope Mitigation Measures require that sites be protected from leaking or dripping fuel and hazardous substances; secondary containment be placed under all container or vehicle fuel tank inlet and outlet points, hose connections, and hose ends during fuel or hazardous substance transfers; vehicles cannot be refueled within the annual floodplain; containers must be marked with the contents and lessee/contractor name; waste from operations be reduced, reused, or recycled to the maximum extent practicable; muds and cuttings should be disposed of by underground injection, where practicable; and that proper disposal of garbage and putrescible waste be utilized.

Great Bear's North Slope Mitigation Measure Analysis states that fuel and hazardous substance containers with an aggregate storage capacity greater than 55 gallons will be stored at least 100 feet from any waterbody and at least 1,500 feet from current surface drinking water sources (A.4.a); drip pans or liners will be placed under parked vehicles or equipment to capture fluids (A.4.b); surface liners will be used under all potential spill points; adequate sorbents are on hand during fuel transfers and ensure that personnel are properly trained and understand proper procedures for handling flammable and combustible fluids (A.4.c); all containers with fuel or hazardous substances will be labeled with the contents and lessee's/contractor's name (A.4.e); and solid burnable waste may be incinerated on location. All waste generated as part of operations will be hauled off-site for disposal at an approved facility (A.4.g).

ii. Habitat, Fish, Wildlife and Subsistence

Habitat

Any exploration activity can impact habitat, fish, and wildlife. The North Slope Mitigation Measures are designed to minimize these impacts. The Project activities will take place on gravel pads and roads impacting approximately 9.5 acres. Due to the location and relatively close proximity to the Dalton Highway, the Division anticipates impacts to habitat, fish, and wildlife will be limited and temporary. Great Bear is expected to adhere to ADF&G and USFWS permitting requirements and stipulations as deemed necessary.

Fish

The Sag River, located just over one-half mile to the east of both Alkaid 2 and Alkaid 3, is an anadromous stream, supporting the spawning and overwintering of several species of fish that then migrate to nearshore coastal waters to feed in the summer. Migration patterns vary

by species and within species by life stage. The Alcor 1 staging pad is located within one-half mile buffer of the Sag River. The risks from exploration activities are expected to have minimal impacts on the Sagvanirktok River or any fish-bearing streams. Potential effects of exploration activities include degradation of stream banks and erosion, reduction of or damage to overwintering areas, impediments to migration, and fish kills due to oil spills.

A potential habitat impact at the exploration phase is erosion. Erosion results in siltation and sedimentation, which in turn may result in a reduced or altered stream flow that may affect overwintering habitat availability and the ability of fish to migrate upstream. Protecting the integrity of stream bank vegetation and minimizing erosion are important elements in preserving fish habitat. Streambeds could be affected if stream banks are altered from equipment crossings.

Withdrawal of water from lakes and ponds could affect fish overwintering habitat by entraining juvenile fish, lowering water levels, and increasing disturbance. The construction of gravel roads across rivers and streams may also affect the ability of fish to reach overwintering areas by blocking movement and causing direct loss of overwintering habitat. Removal of water from lakes where fish overwinter may affect the viability of overwintering fish, and longer-term effects of lake drawdown may impede the ability of fish to return to the lake in subsequent years. Removal of snow from lakes may increase the freeze depth of the ice, kill overwintering and resident fish, and adversely affect the ability of fish to utilize the lake in future years.

North Slope Mitigation Measure A.2.b requires that removal of water from fish-bearing rivers, streams, and natural lakes have prior written approval by DMLW and ADF&G. Water intake pipes used to remove water from fish-bearing waterbodies must be surrounded by a screened enclosure to prevent fish entrainment and impingement, and must use fish screening devices approved by ADF&G.

Before a permit to appropriate water is issued, DMLW considers local demand and may require applicants to conduct aquifer yield studies. Generally, water table declines associated with the upper unconfined aquifer can be best mitigated by industrial users tapping confined (lower) layers or searching for alternate water sources.

Wildlife

The Sag River delta contains breeding and brood-rearing habitat for several bird species including tundra swans, black brant, snow geese, and Canada geese. The most abundant marine and coastal species include red phalarope, northern pintail, long-tailed duck, glaucous gull, and king and comm eider. Most species are migratory and are found in the Arctic from mid-May through September. As recommended by USFWS, to reduce the Project's impact on area nesting, Great Bear has scheduled laying geotextile fabric and gravel for both pads, prior to June 1, outside of the primary bird nesting period.

Exploration-related disturbance is expected to have minor impacts on caribou, particularly large groups, with animals being briefly displaced from feeding and resting areas when vehicles pass nearby. Vehicle traffic associated with transportation corridors, such as the Dalton Highway, has the potential to affect habitat use. Acute disturbance effects may in combination result in a cumulative effect on habitat availability for those individuals with fidelity to the Kuparuk River

calving area but may have little or no effect on the Central Arctic herd population. It is expected these disturbances would be short-term.

Moose are present across the North Slope, with the largest concentration along the Colville River and its tributaries. Moose generally remain in the foothills and along river corridors. Great Bear's proposed drilling program is expected to have little effect on the North Slope moose population.

The temporary displacement of some polar bears from preferred habitats may result from routine exploration activities such as the proposed Plan activities and activities Great Bear proposes throughout the exploration phase. Potential impacts to polar bears from exploration activities such as those proposed in the Plan include disruption of denning, attraction to areas of activity, vehicular traffic or noise, and adverse interaction with humans. Polar bears may be present in upland and offshore areas year-round.

Polar bears continually search for food. Once bears find a camp or industrial site, they will often enter to explore and search for food. If a bear receives a food reward, then it is more likely to return. Polar bears often investigate not only things that smell or act like food, but also novel sights or odors. Subadult bears are more likely than well-fed bears to be food-stressed and attracted to human activity. Subadults are also less likely to leave if a potential food source is present. Attractants include kitchen odors, deliberate feeding, accessible garbage, sewage lagoons, carcasses, industrial materials, and alteration of habitat. Due to its proximity to existing transportation infrastructure and location inland, the Project is unlikely to significantly increase temporary displacement and disturbance above the level caused by existing transportation activities.

Brown bears can be found throughout the Arctic region in varying densities. The lowest densities occur along the coastal plain; brown bears are at the northern limits of their range in the Arctic. The availability of food is limited, and their reproductive potential is low. Brown bears may be subject to disturbance from oil and gas activity. During exploration, human activity may attract foraging bears, especially to refuse disposal areas. Omnivores are attracted to food and food odors associated with human activity and may become conditioned to non-natural food sources. This may pose a threat to human safety and the potential need to dispatch nuisance animals. Bears can also be displaced by human land use activities.

There are several regulations imposed by state, federal, and local agencies that are implemented to avoid, minimize, and mitigate these potential effects to bears. In addition to complying with the Endangered Species Act and the Marine Mammal Protection Act, Great Bear must comply with mitigation measures to minimize effects of exploration activities on bears.

Muskoxen are present throughout the North Slope and are mainly distributed along rivers such as the Sagvanirktok River and Colville River. Muskoxen are not adapted for digging through snow and seek areas with shallow snow to better access food. The proposed project is near muskoxen habitat and may minimally impact the muskoxen population.

Subsistence

Traditional subsistence uses in the area include brown bear, caribou, musk ox, and moose harvesting; hunting and trapping of furbearers such as wolf, fox, weasel, wolverine, and squirrel;

hunting migratory waterfowl and collecting their eggs; fishing for whitefish, char, salmon, smelt, grayling, trout, and burbot; and collecting berries, edible plants, and wood.

Potential exploration activities that could have effects on subsistence uses in the area include discharges from well drilling and ongoing disturbances from operation activities such as vehicle traffic. Noise, traffic disturbance, and oil spills generally produce short-term impacts on subsistence species.

The North Slope Areawide BIF contains several mitigation measures intended to reduce conflicts with subsistence, commercial, and sport harvest activities. Prior to submitting a Plan to the Division, the lessee must consult with affected subsistence communities and the NSB to discuss reasonably foreseeable effects on subsistence during the proposed operations, and methods of proposed operations and safeguards or mitigation measures that can be implemented to prevent unreasonable conflicts. The lessee must make reasonable efforts to ensure that the proposed exploration activities are compatible with subsistence hunting and fishing and will not result in unreasonable interference with subsistence harvests. The Division may implement restrictions, as appropriate, to reduce potential conflicts.

iii. Historic or archeological sites

While exploring, Great Bear could encounter prehistoric, historic, or archaeological sites. AS 41.35.200 addresses unlawful acts concerning cultural and historical resources. In addition, all field-based response workers are required to adhere to historic properties protection policies that reinforce that it is unlawful to collect or disturb, remove, or destroy any historic property or suspected historic property, and to immediately report any historic property that they see or encounter.

Under NSBMC, proposed exploration shall not impact any historic, prehistoric, or archaeological resource before the assessment of that resource by a professional archaeologist (NSBMC 19.50.030(F)). NSBMC 19.70.050(F) states, "Development shall not significantly interfere with traditional activities at cultural or historic sites identified in the Coastal Management Program." These provisions give the NSB authority to protect cultural and historic resources and current subsistence uses of these sites.

North Slope Mitigation Measures require the lessee to conduct an inventory of prehistoric, historic, and archaeological sites within the area affected by an activity. The inventory must include consideration of literature provided by the NSB, nearby communities, Native organizations, and local residents; documentation of oral history regarding prehistoric and historic uses of such sites; evidence of consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places; and site surveys. The inventory must also include a detailed analysis of the effects that might result from the activity. A cultural resources survey and inventory was conducted in the project area to identify any prehistoric, historic, or archaeological sites. Great Bear has obtained cultural clearances from the SHPO and NSB Cultural Resources Department on potential historical and archaeological resources. No sites are proposed that would impact cultural, historical, or archaeological resources

V. CONSIDERATION OF UNIT PLAN OF OPERATIONS REQUIREMENTS UNDER 11 AAC 83.346(c-d) and 11 AAC 83.390

A. Full Payment of Damages to the Surface Owner 11 AAC 83.346(c)

The State owns the surface and full payment of damages to the State are accomplished through a bond posted by the applicant discussed in subsection C below.

B. Plan Sufficiency 11 AAC 83.346(d)

A proposed plan must include statements, maps, or drawings setting forth

- (1) the sequence and schedule of operations;
- (2) the projected use requirements directly associated with the proposed operations;
- (3) plans for rehabilitation; and
- (4) a description of operating procedures to prevent or minimize adverse effects on natural resources and concurrent uses of the area (11 AAC 83.346(d)).

The information in Section IV. Proposed Operations, above, and additional information contained in Great Bear's proposed Plan satisfy the requirements for a plan under 11 AAC 83.346(d) and thus provide the Division with sufficient information available at this time to determine the surface use requirements and impacts directly associated with the proposed operations.

C. Oil and Gas Lease Bond 11 AAC 83.390 and 11 AAC 83.160(c)

The State owns all the surface land where the proposed Plan activities will be located. The State owns all the mineral estate the Plan proposes to explore. For the State, a lessee provides for payment of damages by posting a bond and remains liable for full damages under the lease. Great Bear has a Statewide Oil and Gas bond in the amount of \$500,000 and continuing liability under the lease. See Section IX(h) for additional bond requirements.

VI. CONSIDERATION 11 AAC 83.303 CRITERIA

A. Protection of Public Interest

The Division has considered the public interest, considering statutory provisions that provide for conserving natural resources through unitized development (11 AAC 83.303(a); AS 38.05.180(p)). The legislature has declared the public's interest in oil and gas development as an interest in developing oil and gas resources to maximize economic and physical recovery, maximize competition, and maximize use of Alaska's human resources (AS 38.05.180(a)(1)).

This Plan addresses the means for carrying out the Project that, as determined by the Alkaid Unit First Plan of Exploration (POE), is necessary for maximizing recovery of the oil resources. Additionally, exploration under this Plan will contribute positively to the market by increasing overall oil production in the area.

The proposed Plan provides for use of Alaska's human resources by pledging to provide local employment and contracting opportunities and to encourage its contractors to do the same (Proposed Plan Mitigation Measure Analysis A.7.a.)

B. Conservation of Natural Resources

The Division has considered whether the Plan promotes conservation of all natural resources, including all or part of an oil or gas Plan, field, or area (11 AAC 83.303(a)(1)). Conservation, in this context, means maximizing the efficient recovery of oil and gas and minimizing the adverse impacts on the surface and other resources (11 AAC 83.395(1)). Development within a unit is intended to provide more efficient development than on the individual leases that make up the unit, and this Plan considers the development of the Unit, not single leases. Efficient development creates less impact on the land and promotes maximum use of all natural resources in the area, consistent with the public interest.

There are a number of ways in which the Plan seeks to minimize adverse impacts on natural resources. This Plan incorporates the mitigation measures set forth in the North Slope Areawide Oil and Gas Lease Sale Final Finding (North Slope Mitigation Measures). These mitigation measures include measures to protect habitat, fish, and wildlife, protect subsistence resources, and limit the impact from fuel and hazardous substances. The Plan also includes operating procedures to prevent or minimize adverse effects, including effects on the environment, wildlife, and subsistence resources discussed in Section IV.M of this decision.

C. Prevention of Economic and Physical Waste

The Division has considered whether the Plan promotes the prevention of economic and physical waste (11 AAC 83.303(a)(2)). Issues of economic and physical waste are carefully considered during Unitization and annually thereafter in the POE. This Plan conforms to the current POE on file with the Division's Units Section.

D. Protection of All Parties of Interest, Including the State

The Division has considered whether the Plan provides for the protection of all parties of interest, including the State (11 AAC 83.303(a)(3)). The parties of interest to a unit plan are the unit operator and working interest owners. The State has an economic interest in the oil and gas resources because it receives royalties from production. It is further in the State's best interest to encourage assessment of oil and gas resources, recognize the costs of exploring in varied geographic regions, and minimize the adverse impact of exploration, development, production, and transportation activity (AS 38.05.180(a)(2)).

Without approval of a plan, Great Bear cannot develop Alkaid 2 and 3, and the State cannot recover royalties from that development. The Plan thus protects the Unit Operator's, working interest owners' and the State's interests in developing the resources.

E. Environmental Costs and Benefits

The Division has considered the environmental costs and benefits of unitized development outlined in this Plan and through the POE, and annual updates, on file with the Units Section (11 AAC 83.303(b)(1)); this Plan conforms to the current POE on file with the Division's Units Section.

The North Slope Mitigation Measures, incorporated into this Plan by amendment, include measures to protect habitat, fish, and wildlife. Additional operating procedures designed to

minimize adverse effects on other natural resources and other uses of the unit area and adjacent areas are discussed in Section IV.M of this decision.

F. Geological and Engineering Characteristics of Hydrocarbons

DNR previously considered the geological and engineering characteristics of a potential hydrocarbon accumulation or reservoir when it approved the unit agreement (11 AAC 83.303(b)(2)); this Plan conforms to the current POE on file with the Division's Units Section.

G. Prior Exploration Activities

The Division has considered prior exploration activities in the Plan area pursuant to 11 AAC 83.303(b)(3). Exploration around the Alkaid Unit can be divided into three phases: early post Prudhoe discovery step-out drilling from 1969-1974; focused exploration tests from 1980 through the mid-1990s driven by increased 2D seismic data coverage; and post 2010 Great Bear Petroleum entrance driving regional 3D seismic coverage across the initial vast leasehold.

Phase 1 was largely conducted by the Atlantic Richfield Oil Company (ARCO) in their effort to expand the Kuparuk River Unit. In 1969, ARCO drilled two wells, Toolik 1 and 2, in proximity to the Project. Both wells were plugged and abandoned with no tests. In the late 80's through the 90's, increased 2D seismic data acquisition led to further exploration of the surrounding areas by various operators; however, exploration within the AKU did not pick up until Great Bear's entry to the area in 2010.

In 2012, Great Bear began acquiring 3D survey data sets covering an area spanning between the AKU and the Talitha Unit, and drilled two stratigraphic test wells, Alcor 1 and Merak 1. Oil shows were documented in both the Campanian and Kuparuk strata correlative to the reservoir zones in Alkaid and Talitha. The Alkaid 1 exploration well was then drilled during the 2014-2015 winter exploration season. Drilling did not reach target depth due to flooding from the Sag River, which led to an eventual suspension of activities at Alkaid 1. Great Bear continued to acquire 3D survey data sets in the area throughout 2015 and 2016. In 2019, Alkaid was re-entered and flow tested with positive results.

H. Plan of Exploration

The Division has considered the plans for exploration set forth in and approved by DNR in the POE (11 AAC 83.303(b)(4)). The current POE, approved on November 2, 2020, approves Great Bear to carry out operations in the proposed Plan.

I. Economic Costs and Benefits to the State

The Division has considered the economic costs and benefits to the State (11 AAC 83.303(b)(5)). Without approval of a plan, Great Bear will be unable to proceed with developing the Project, which will cost the State the economic benefit of the royalties, as well as other economic benefits that flow from production.

J. Other Relevant Factors to Protect the Public Interest

The Division has considered other relevant factors necessary or advisable to protect the public interest (11 AAC 83.303(b)(6)). These other factors consist of the mitigation measures (Section IV.M of this document) that will apply to this Plan; and the existence of other approvals by different Agencies (Section IV of this document).

VII. CONSULTATION WITH OTHER GOVERNMENT ENTITIES

In reviewing the proposed Plan, the Division considered the fact that Great Bear may require approvals from Agencies for other elements of its project. Although mentioned in the Plan and above, these aspects of the project are not operations being approved by this decision and the Division offers no opinion on whether an agency should or should not approve these activities.

In addition to considering the approvals required by Agencies as they relate to this decision, the Division provided an Agency review and comment opportunity for the activities proposed for authorization under this decision. The following government entities were notified on March 14, 2022, for comment on the Plan: USACE, SPCO, ADF&G, ADEC, DOT, DMLW, AOGCC, USFWS, and NSB. The comment deadline was 4:30 pm Alaska time on March 28, 2022. DMLW requested an extension, and the comment period was extended two days ending 4:30 pm Alaska time on March 30, 2022. Comments were received from various agencies and the Division, Applicant, and commenting agencies modified the Plan to the satisfaction of the commenting agencies; Agency comments and Applicant's responses are summarized in Appendix B. The modified Plan was then publicly noticed and recirculated to the aforementioned agencies.

VIII. PUBLIC NOTICE

Public notice of the Plan and opportunity to comment, per AS 38.05.035, was published on the DNR and the Division web sites and faxes of the public notice were sent to the Deadhorse, Nuiqsut, and Utqiagvik post offices on April 7, 2022. Additionally, a copy of the notice was posted in Anchorage Daily News on April 11 and April 17, 2022, and the Arctic Sounder on April 14, and April 28, 2022, with a deadline for comments of May 7, 2022, at 4:30 pm Alaska time. No comments were received.

IX. CONDITIONS OF APPROVAL

Having considered the proposed project, the Division approves the Plan as amended and modified by this decision and subject to the below conditions of approval.

To protect the State's interest, the Division finds that it is necessary to amend the Plan to incorporate the following Conditions of Approval:

- a) The applicant shall defend, indemnify, and hold the State of Alaska harmless from and against any and all claims, damages, suits, losses, liabilities and expenses for injury to or death of persons and damage to or loss of property arising out of or in connection with the entry on and use of State lands authorized under this approval by the applicant, its contractors, subcontractors and their employees.
- b) The applicant shall inform and ensure compliance with any and all conditions of this approval by its employees, agents and contractors, including subcontractors at any level.
- c) Unless pre-authorized by a general permit, amendments and modifications to this approval require advance notice and must be approved in writing by the DNR.
- d) The Commissioner of the DNR may require that an authorized representative be on site during any operations conducted under this approval. This stipulation is required to

ensure that DNR meets its statutory responsibilities for monitoring activities taking place on State-owned lands.

- e) A status report for the activities conducted under this approval must be filed with this office on May 1 and November 1 each year, from the date this approval is issued and until a final completion report is filed with the Division. If a lessee requests an assignment, a status report must also be submitted during the assignment process. Failure to file in a timely manner may result in revocation of this approval.
 - 1) Each status report shall include a statement describing and map(s) depicting all operations actually conducted on the leased area as of the date the report is prepared, which includes the location, design and completion status of well sites, material sites, water supplies, solid waste sites, buildings, roads, utilities, airstrips, and all other facilities and equipment installed.
 - 2) Upon completion of operations, the applicant will submit a completion report that will include all information required of a status report described in (a) above as well as a statement indicating the date of operations completion, any noncompliance with the terms of this plan approval of which a reasonable lessee would have knowledge of, clean-up activities conducted, the method of debris disposal, and a narrative description of known incidents of surface damage.
- f) Notification. The applicant shall notify the DNR of all spills that must be reported under 18 AAC 75.300 under timelines of 18 AAC 75.300. All fires and explosions must be reported to DNR immediately. The DNR 24-hour spill report number is (907) 451-2678; the fax number is (907) 451-2751. The Department of Environmental Conservation (DEC) oil spill report number is (800) 478-9300. DNR and DEC shall be supplied with all follow-up incident reports.
- g) A certified As-Built survey and GIS shapefile of the improvement shall be provided within one year of placement of the improvement. This As-Built must be submitted in both electronic and physical format.

To protect the State's interest, the Division finds that it is necessary to amend the Plan to incorporate the following Project Specific Stipulations:

- h) The State requires that Great Bear provide an unusual risk bond pursuant to 11 AAC 83.160(c). This stipulation is required to reduce the risk to state land presented by summer exploration activities on new gravel infrastructure. This bond may be eligible for cancellation under the condition that Great Bear has fulfilled its obligations under Section IV(L) of this approval to the satisfaction of the State, and/or in the instance that Great Bear receives approval to move to the development phase of the Plan.
- i) The State requires that Great Bear operate the equipment only within the footprint of the planned gravel improvements when constructing the pads and roads.

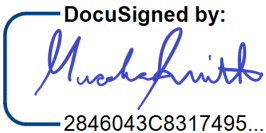
X. FINDINGS AND DECISION

Having considered the proposed project and based on the foregoing discussion and consideration of issues, the Division makes the following findings:

1. The Plan provides sufficient information, based on reasonably available data, for the Division to determine the surface use requirements and impacts directly associated with the proposed operations.
2. The Plan includes statements, maps, or drawings setting forth the sequence and schedule of operations, projected use requirements, description of operating procedures, and a plan of rehabilitation designed to prevent or minimize adverse effects.
3. To protect the State's interest and mitigate potential adverse social and environmental effects associated with the Plan, the Division finds it necessary to amend the Plan to incorporate the mitigation measures set forth in the North Slope Areawide Oil and Gas Lease Sale Final Finding.
4. All oil and gas activities conducted under oil and gas leases are subject to numerous local, state, and federal laws and regulations with which Great Bear is expected to comply.
5. The people of Alaska have an interest in developing the State's oil and gas resources and maximizing the economic and physical recovery of those resources (AS 38.05.180(a)).
6. Alaska's economy depends heavily on revenues related to oil and gas production and government spending resulting from those revenues. The related revenue sources include bonus payments, rentals, royalties, production taxes, income taxes, and oil and gas property taxes.
7. Great Bear requested exemptions to mitigation measures A.1.h, A.5.a, and A.5.d. The Division has reviewed these requests and grants exemptions to these mitigation measures to allow for the Applicant's alternatives as set forth in the Plan.
8. The potential benefits of approving this Plan outweigh the possible adverse effects, which have been minimized through imposition of mitigation measures, conditions of approval, and project specific stipulations, and thus approval of this Plan as modified is in the State's best interest.

Based upon the Plan, supporting information provided by the applicant and the Division's review, determination of applicable statutes and regulations, consultation with other agencies, relevant entities and individuals, public comment, and the above findings related to that Plan, the Division hereby approves the Plan as modified.

Sincerely,

DocuSigned by:

2846043C8317495...

Graham Smith
Petroleum Land Manager
Division of Oil and Gas

5/13/2022

Date

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of “issuance” of this decision, as defined in 11 AAC 02.040(c) and (d) and may be mailed or delivered to the Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; faxed to 1-907-269-8918, or sent by electronic mail to dnr.appeals@alaska.gov. Under 11 AAC 02.030, appeals and requests for reconsideration filed under 11 AAC 02 must be accompanied by the fee established in 11 AAC 05.160(d)(1)(F), which has been set at \$200 under the provisions of 11 AAC 05.160 (a) and (b). This decision takes effect immediately. If no appeal is filed by the appeal deadline, this decision becomes a final administrative order and decision of the department on the 31st calendar day after issuance. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

Attachments: Appendix A: Figures 1-9
Appendix B: Agency Comments
2018 North Slope Mitigation Measures

ecc: DOG: James Hyun, Ashley Ethridge, Jacob Rowland, DOG Units, Chalinda Weerasinghe,
and SPCO Records
DMLW: DMLW North Slope, SAIL Section, and Henry Brooks
ADF&G: Maria Wessel, Audra Brase, and Chelsea Clawson
ADEC: Laurie Silfven, DEC Agency Reviews, DEC Water Oil and Gas, Contaminated
Sites Scoping
AOGCC: Meredith Guhl
ADOT: Pete Eagan
Borough: NSB Permitting
Other: USACE, USFWS, and DNR Parks OHA Review Compliance

Appendix A: Figures

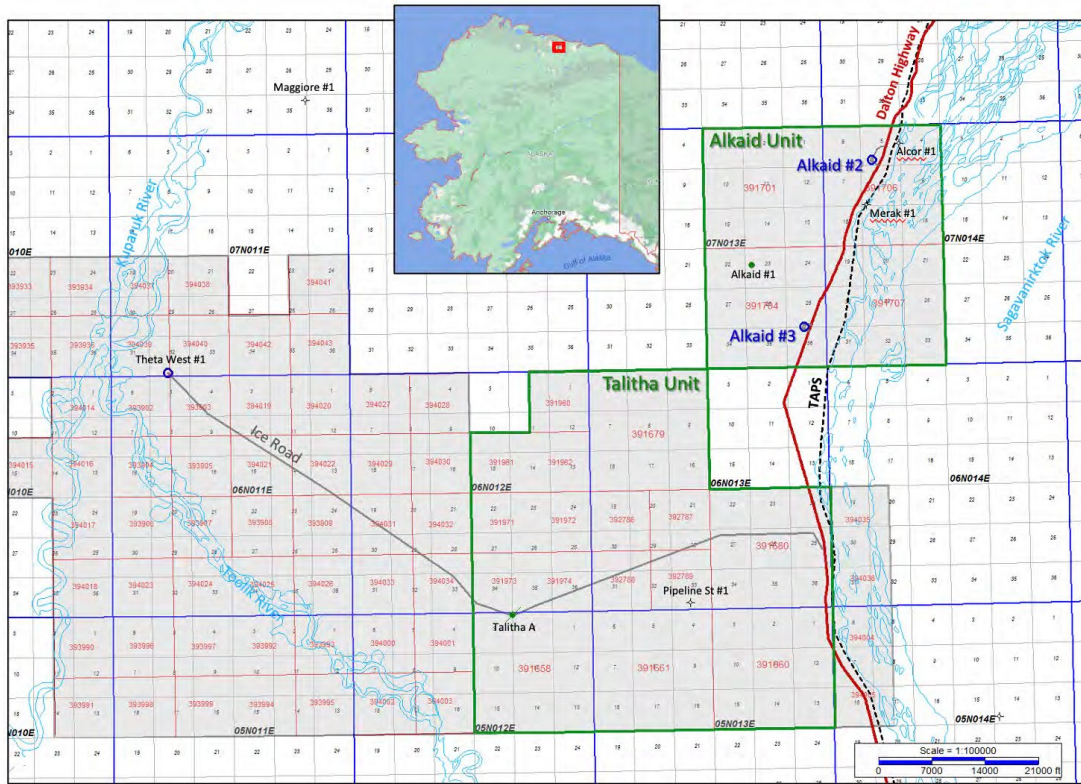


Figure 1.

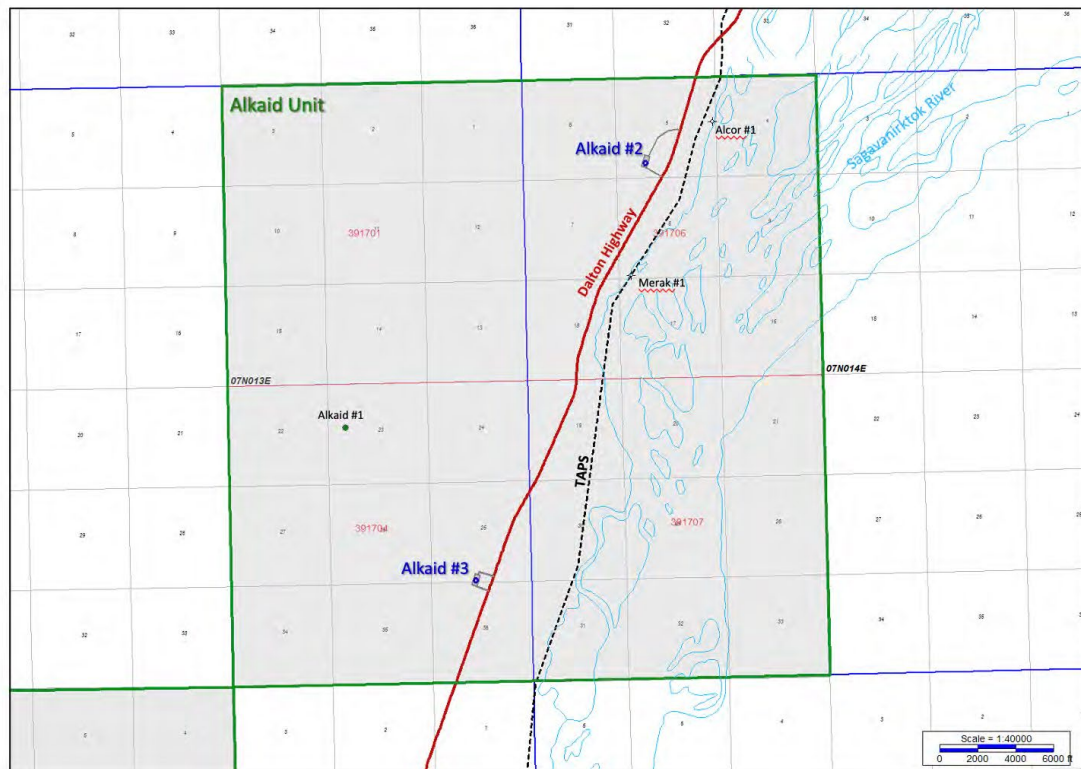


Figure 2.



Figure 3.



Figure 4.

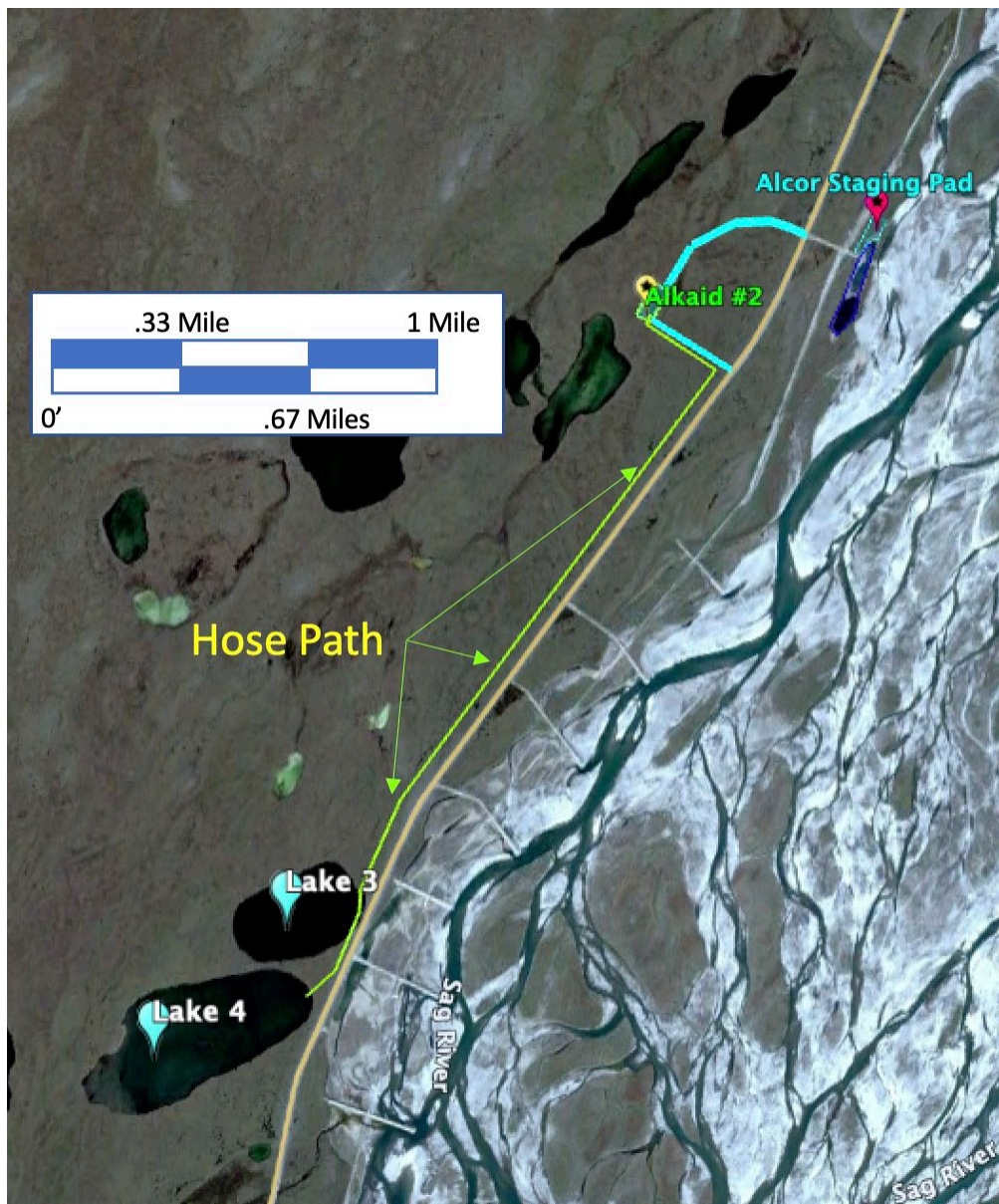
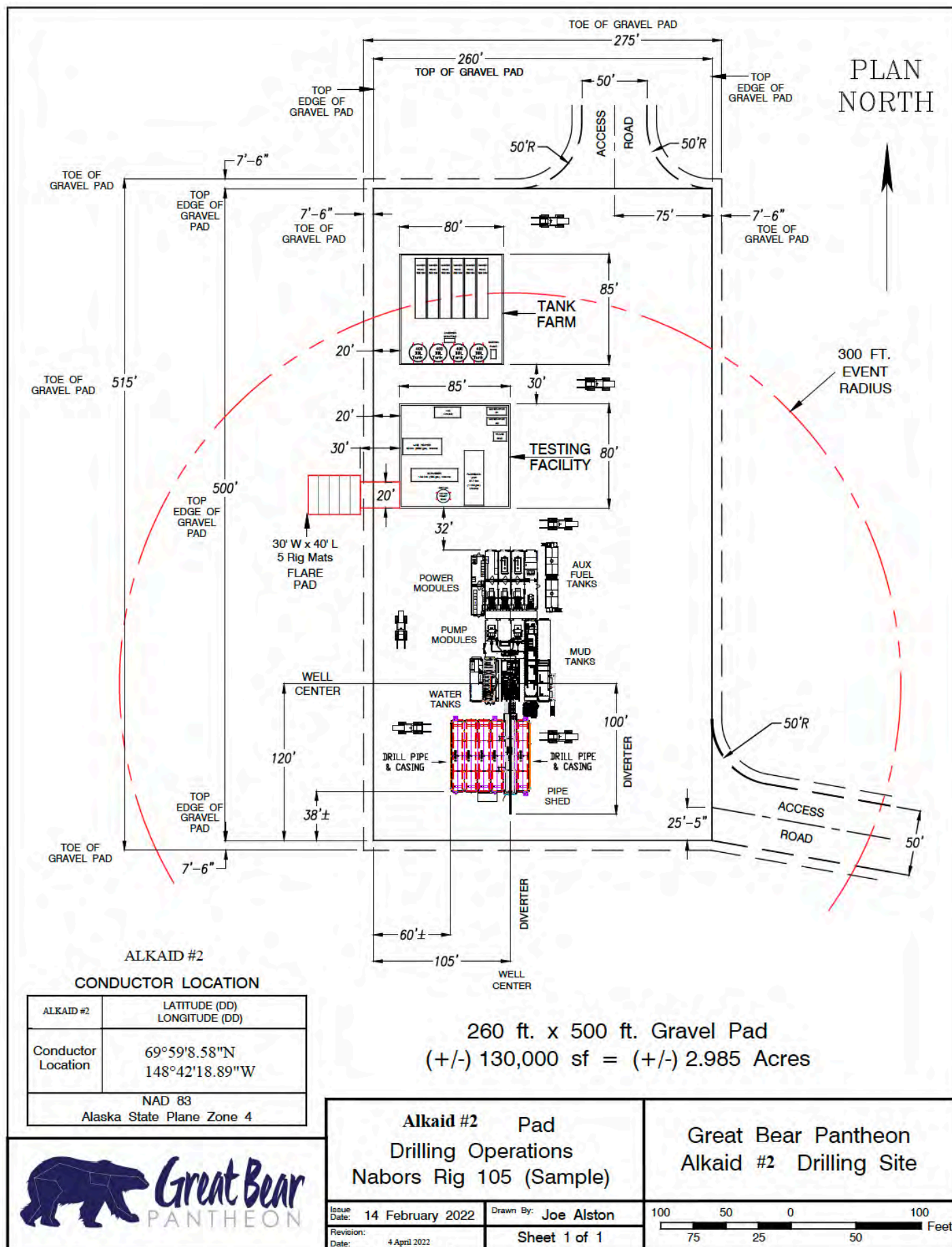


Figure 5.



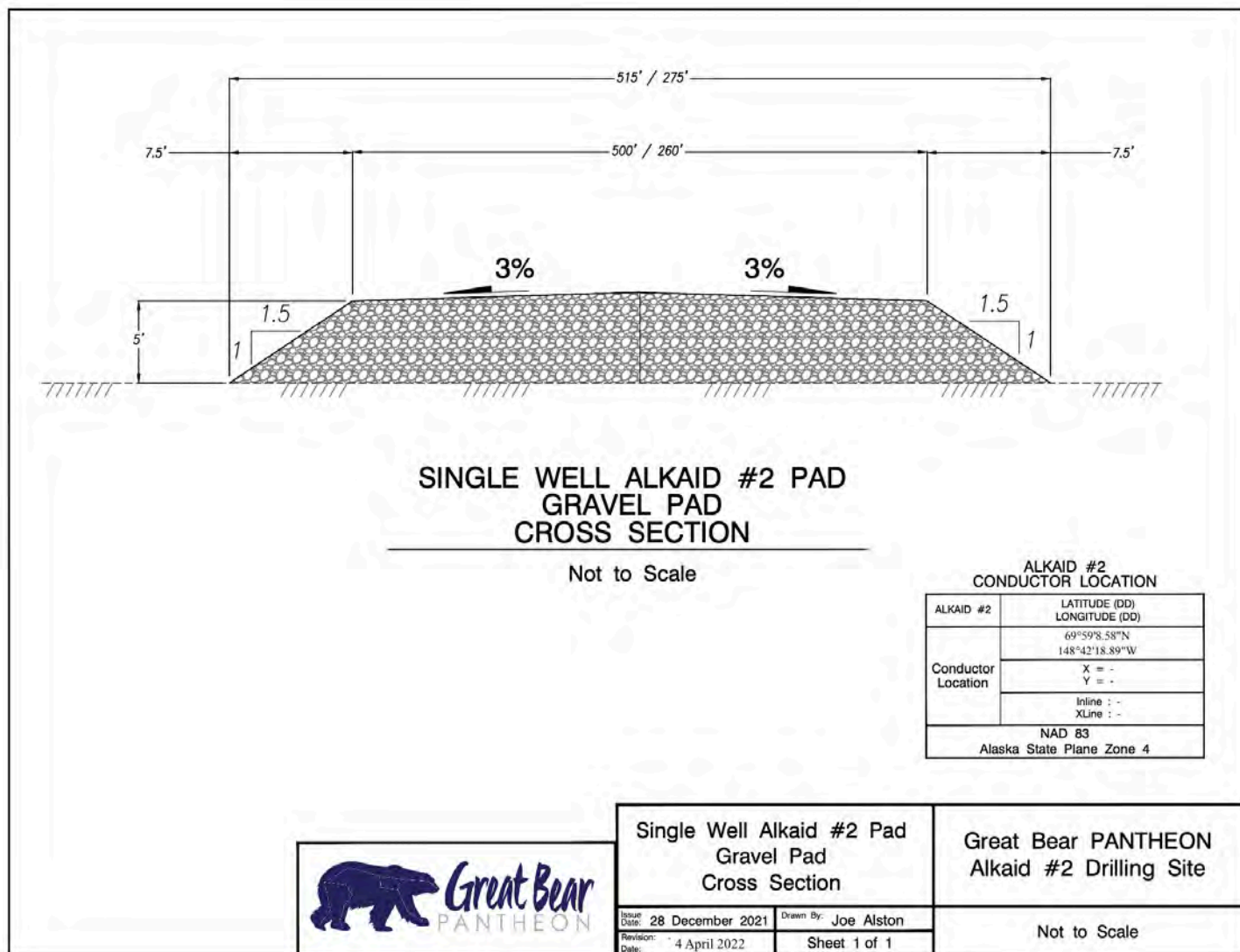


Figure 7.

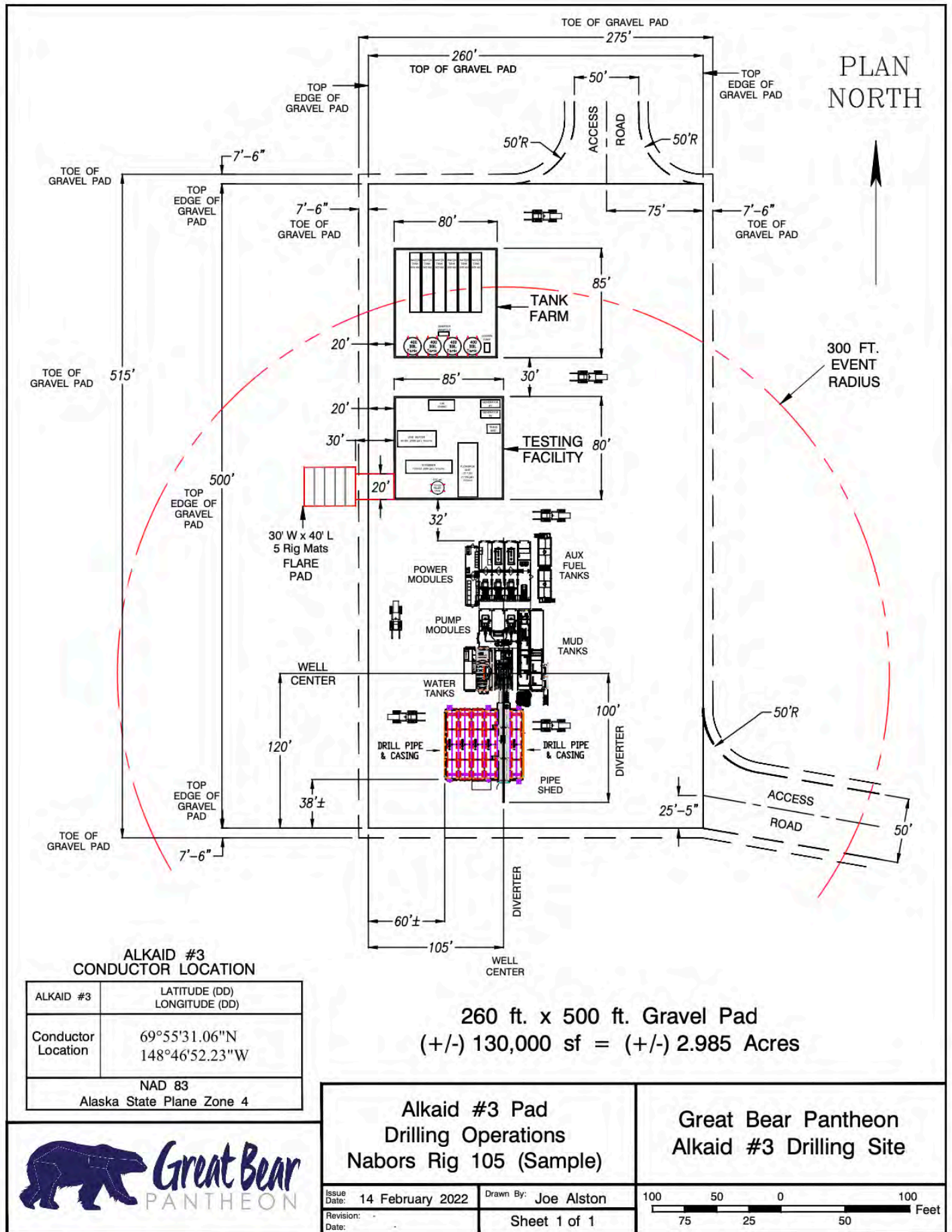


Figure 8.

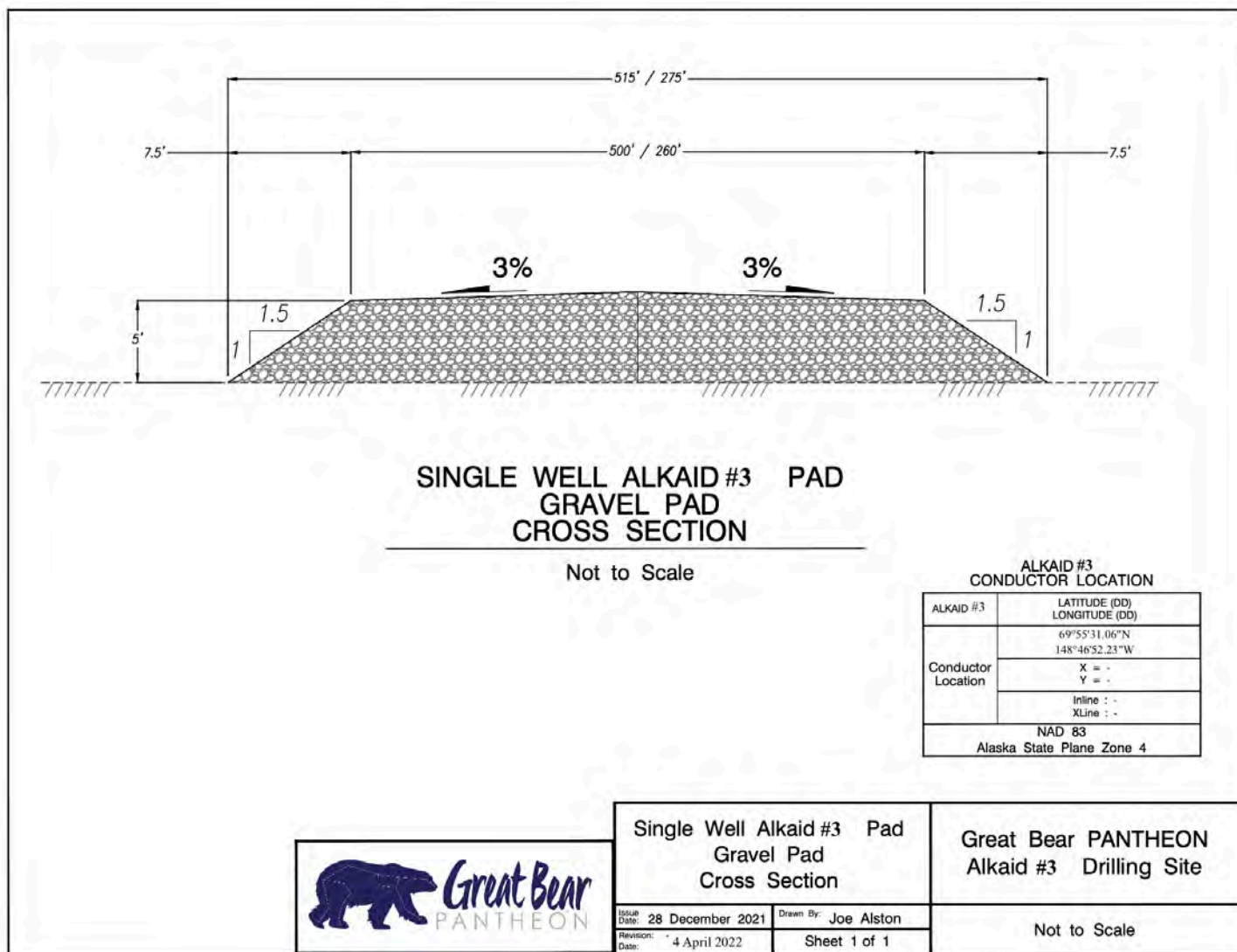


Figure 9.

Appendix B: Agency Comments, and Division Responses

ADEC Comments received March 16, 2022

Thank you for the opportunity to comment with respect to public water system (PWS) sources. Given the location(s) provided, exploration program activities are near active registered PWS sources (see attached “DEC_PWS_Map.PNG” and summary table below). For this reason, we ask that the applicant please adhere to the attached Recommendations for General Project Activities, where applicable.

Division Response: Noted.

DOG SPCS Comments Received March 30, 2022

The State Pipeline Coordinator’s Section (SPCS) reviewed Great Bear Pantheon LLC’s (Great Bear) Alkaid 2 and Alkaid 3 Wells Unit Plan of Operations Application for proposed gravel pads, access road and use of Alcor 1 as a staging area to support the project.

The SPCS submitted comments on the first review of LONS 22-002 Great Bear Alkaid 2 and 3 application February 24, 2022. Those comments are still applicable for this review.

Alcor 1 – staging area:

To use the Alcor 1 area Great Bear would have to use ADL 403061, a Trans-Alaska Pipeline System (TAPS) Access Road 134 APL/AMS-3A which crosses both the TAPS Oil Pipeline and the TAPS Fuel Gas Pipeline. The SPCS requests Great Bear Pantheon, LLC, before the beginning of each season, receive a letter of non-objection from Alyeska Pipeline Service Company (APSC), since the proposed activities are anticipated to enter or cross the AS 38.35 pipeline right-of-way, and coordinate with APSC to ensure Great Bear activities will not conflict with APSC work projects. The Alaska LNG-Mainline Pipeline Conditional Lease (AKLNG-Mainline), ADL 421297, will also be using this access road.

Alkaid 2 and 3 – gravel pads, access roads:

The proposed gravel access roads to/from the Alkaid 2 and Alkaid 3 gravel pads could create future conflicts with the AS 38.35 pipeline lessees, Alaska Gasline Development Corporation’s - Alaska LNG-Mainline Pipeline Conditional Lease (AKLNG-Mainline), ADL 421297 and Alyeska Pipeline Service Company’s - Trans-Alaska Pipeline System (TAPS), ADL 63574. The egress road from Great Bear’s Alkaid 2 gravel pad would cross a planned AKLNG-Mainline gravel pad. The access roads (ingress and egress) for Alkaid 3 would cross AS 38.35 pipeline rights-of-way for AKLNG-Mainline and TAPS.

Although, Great Bear anticipates that work will cease after the two exploratory wells are tested and the gravel pads/access roads may be removed, or available to other users, the Great Bear application also indicates that if the wells are found to be productive, they may be transitioned into production wells, which could make the gravel pads/access roads a long-term Great Bear improvement with ongoing use.

Division Response: Noted and forwarded to the applicant.

Applicant Response: Great Bear will obtain all necessary LNO's.

USFWS Comments received March 31, 2022

Attached are the U.S. Fish and Wildlife Service, Branch of Conservation Planning Assistance's comments regarding the referenced request for agency comments. If you have any questions, please feel free to contact me. Thank you for this opportunity to comment.

Division Response: Noted and forwarded to the applicant.

Applicant Response: Based on recommendations from the US Fish and Wildlife, in order to mitigate any potential impact to migratory bird nesting, Great Bear will ensure that a layer of permeable geotextile fabric is placed over the Alkaid 2 pad area and each driveway path prior to June 1. As noted by USFWS, this activity should be sufficient to discourage the nesting of any migratory birds in the project area. In addition, Great Bear will not place any gravel at the Alkaid 3 location until after July 31.

DMLW Comments received March 31, 2022

Thank you for the opportunity to review the proposed Great Bear Alkaid 2 and 3 Exploration Program. DMLW has no objection to the project, but has a few corrections, clarifications, and a recommendation for a practicable alternative to gravel infrastructure.

Third Party Interests:

Alkaid 2 is located in close proximity to a proposed laydown yard for the AKLNG gas line and one of the driveways may cross that portion of the right-of-way lease.

The Alcor staging pad access overlaps an easement to Alyeska Pipeline Service Company and a right-of-way lease for the AKLNG gas line.

Comments and Recommendations:

Mitigation measures 1.e, 1. h., 5. a., and 5. d. were developed in recognition that oil and gas exploration activities do not always lead to production and, on the North Slope, the long winter season allows for less impactful ice pads and roads. In this case, Great Bear suggests that the drilling and fracing can't be supported by the ice season alone due to the need to high volumes of water and time needed for fracing activities. These two drilling locations are good candidates for over-summer ice pads that would greatly reduce long-term negative impacts. Such ice pads have been used successfully for exploration drilling (Puvialak, Yukon Gold) and for more intensive pipeline maintenance within the oil fields. Over-summer ice pads greatly reduce the long-term impacts of drilling activities. In most cases, the underlying tundra recovers within a few years after the ice pad is allowed to melt. In the case of gravel infrastructure, rehabilitation often takes decades to recover to productive habitat.

Great Bear notes that should the gravel pads no longer be necessary, the state could choose to allow the gravel pads to remain in place for reuse by other parties or the public. While DMLW supports reuse of gravel structures, without a future user identified, most likely the gravel pads will remain managed by the state. DNR does not have funds available to ensure that proper maintenance occurs to gravel pads so that they remain viable for future users. Nor does DNR have the ability to ensure that the gravel pads remain clean. The public uses existing gravel structures for camping while traveling the Dalton Highway and hunting. There are no public facilities between Coldfoot and Deadhorse that are publicly maintained leading to trash, disturbance, and other issues at many camping locations.

DMLW recommends that Great Bear design the Alkaid 2 and 3 exploration sites to utilize over-summer ice pads, a practicable alternative to gravel infrastructure. The project could be a beneficial demonstration for future oil and gas exploration activities, other agencies, and the public.

Thank you again for the opportunity and additional time to provide comments as this is an important project for the State. DMLW is open to further discussing our comments and/or answering any follow up questions on BMPs for over-summer ice pads should DOG want to discuss that alternative further.

Division Response: Noted and forwarded to the applicant.

Applicant Response: DNR-DMLW recommended that Great Bear use over-summer insulated ice pads (“insulated ice pads”) rather than the proposed gravel pads. Great Bear investigated the potential use of such insulated ice pads and found that they were not a feasible alternative for the Alkaid 2 or Alkaid 3 projects. During the summer (insulated – preservation period), such pads are only suitable for equipment or rig storage. Equipment cannot be moved around the pad, on or off the pad, and operations cannot be performed on the pad during this “insulated” period. Great Bear needs to be able to perform operations on the pad during the summer months in order to complete the well when water is available, and needs to have continuous access to the pad during period of test production. The current technology for insulated ice pads simply doesn’t work to accomplish the necessary goals of the Alkaid 2 and Alkaid 3 projects.

USACE Comments received April 7, 2022

The USACE submitted a comment in response to Great Bear’s request for Department of Army General Permit verification to discharge 45,457 cubic yards of gravel in 11.7-acres of palustrine wetlands to construction two drill pads (Alkaid 2 and 3) and access roads off the Dalton Highway. USACE determined that DA authorization (RGP 05) is necessary because the project will involve the discharge of dredged and/or fill material into waters of the U.S. under USACE regulatory jurisdiction. Great Bear will need to comply with all terms and conditions associated with RGP 05, as well as with the special conditions.

Division Response: Noted and forwarded to the applicant.

SPCS Comments received April 22, 2022

The State Pipeline Coordinator's Section (SPCS) reviewed Great Bear Pantheon LLC's (Great Bear) Alkaid 2 and Alkaid 3 Wells Unit Plan of Operations Application for proposed gravel pads, access road and use of Alcor 1 as a staging area and the use of "Annie Pit" to store water to support the project.

The SPCS submitted comments on LONS 22-002 Great Bear Alkaid 2 and 3 application February 24, 2022 and March 30, 2022. Great Bear has or is in the process of resolving many of those comments.

The SPCS requests Great Bear to continue discussions with Alyeska Pipeline Service Company (APSC) and the Alaska Gasline Development Corporation (AGDC) to coordinate all activities so that there are no conflicts with anticipated work projects.

Division Response: Noted and forwarded to the applicant.

Applicant Response: Great Bear will obtain a letter of non-objection from APSC. Great Bear is moving the Alkaid 2 site approximately 300 feet north. This move will avoid any conflict with the AGDC proposed pipe storage pad located off of MPP 24.8 of the AGDC mainline project (approximately Dalton Highway MP397). In addition, the Alkaid 3 drill pad is located over 500 feet west of the 65-foot wide AGDC mainline ROW, as well as the 110-foot wide construction ROW. Since the mainline would be buried, the Alkaid 3 driveways should not represent a conflict with the AGDC ROW and should only represent an additional road crossing to be accommodated. The driveways are designed to be at least 5 feet above grade.

DMLW Comments received April 22, 2022

DMLW has review the materials provided and has no objection to the updated project details. As discussed in the "220404-Clarification and Adjustments" document, we understand that a DR&R plan is being drafted but not yet complete. DMLW requests the opportunity to review the draft plan prior to final approval of LONS 22-002.

Division Response: Noted and forwarded to the applicant. A copy of the draft DR&R report has been submitted to DMLW. As the lead agency, the Division will coordinate with the applicant and agencies as appropriate, in finalizing a DR&R plan to ensure the project site is dismantled, removed, and/or rehabilitated to the satisfaction of the DNR commissioner.